

Claims

I claim:

1. An optical communication network comprising an optical communication ring, an optical reference node connected in said ring, said optical reference node
5 comprising:

an input terminal of said optical reference node coupled to an input terminal of an optical demultiplexer, said demultiplexer having a plurality of output terminals;

10 an optical multiplexer having an output terminal and a plurality of input terminals, said output terminal of said multiplexer being coupled to an output terminal of said optical reference node, said input terminals of said multiplexer being coupled to corresponding output terminals of said demultiplexer via a series of parallel optical lines;

15 a plurality of optical switches connected, respectively, in said series of parallel optical lines;

a plurality of voltage-controlled optical attenuators connected, respectively in said series of parallel optical lines; and

20 an optical channel monitor, an input terminal of said optical channel monitor being coupled to said output terminal of said multiplexer, an output terminal of said optical channel monitor being coupled to said voltage-controlled optical attenuators.

2. The optical reference node of Claim 1 further comprising an optical pre-amplifier connected between said input terminal of said optical reference node and said input terminal of said demultiplexer.

25 3. The optical reference node of Claim 1 further comprising an optical boost amplifier connected between said output terminal of said multiplexer and said output terminal of said optical reference node.

4. The optical reference node of Claim 1 wherein each of said optical switches is connected between one of said output terminals of said demultiplexer and one of said voltage-controlled attenuators.

5 5. The optical reference node of Claim 1 wherein each of said switches is a 2x2 switch.

6. An optical communication network comprising an optical communication ring, said ring comprising a plurality of optical add/drop nodes, each of said add/drop nodes comprising:

a controller;

10 first and second optical add/drop filters, said first add/drop filter being coupled to an input terminal of said add/drop node and being set to pass a predetermined optical channel, said second add/drop filter being coupled to an output terminal of said add/drop node; and

15 a voltage-controller attenuator and an optical power meter, a control terminal of said voltage-controlled attenuator being coupled to said controller, said optical power meter being connected so as to measure the power of an optical channel emerging from said voltage-controlled attenuator and to deliver a signal representing said power to said controller.

20 7. The optical communication network of Claim 6 further comprising an optical service channel, said optical service channel comprising:

a device for measuring a power at a first point in said optical service channel;

a means for transmitting a data signal in said optical service channel representing said power at said first point;

25 a device for measuring a power of said optical service channel at a second point in said optical service channel.

8. The optical communication network of Claim 7 wherein said means for transmitting comprises a computer.

9. The optical communication network of Claim 7 comprising a means for comparing an output of said device for measuring power at said second point with said data signal.

10. The optical communication network of Claim 7 wherein said first point is located near an optical reference node and said second point is located near an optical add/drop node.

11. The optical communication network of Claim 7 wherein said first point is located near a first optical add/drop node and said second point is located near a second optical add/drop node.

12. The optical communication network of Claim 7 wherein said first point is located near an optical add/drop node and said second point is located near an optical reference node.

13. An optical communication network comprising an optical communication ring, said ring comprising a plurality of optical add/drop modules and a hub, each of said add/drop modules comprising:

a first optical filter having an input terminal and a drop terminal, said input terminal of said first optical filter being coupled to an input terminal of said add/drop module; and

a second optical filter having an input terminal coupled to an output terminal of said first optical filter, an output terminal coupled to an output terminal of said add/drop module, and an add terminal; wherein said first optical filter is adapted to filter out a first channel included in an optical transmission at said input terminal of said first optical channel and to deliver said first channel to said drop terminal, and said second optical filter is adapted to add said first channel appearing at said add terminal to an optical transmission appearing at said input terminal of said second optical filter such that said first channel appearing at said add terminal is combined with said optical transmission at said input terminal of said second optical filter;

said hub being connected to said ring, said hub comprising an optical mux filter and an optical demux filter, said demux filter being coupled to an input terminal of said hub, said mux filter being coupled to an output terminal of said hub.

14. The optical communication network of Claim 13 wherein said hub further
5 comprises a plurality of terminals each of which is adapted to carry a channel of an optical transmission.